

Prevalence of Depression among School-going Adolescents in an Urban Area of Bihar, India

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ABSTRACT

Introduction: Depression is one of the under-recognized health problems in adolescents. Emotional instability resulted from childhood to adulthood transition makes adolescents vulnerable to depression. **Aims:** The aim of the study was to explore the prevalence of depression and its associated sociodemographic factors among school-going adolescents. **Materials and Methods:** This cross-sectional study was undertaken from January 2016 to June 2016 in adolescents studying in 9–12th standard from forty schools located in an urban area of Patna, Bihar. The self-administered questionnaire of Beck's Depression Inventory II was utilized to assess the prevalence of depression. Statistical analysis was done with Pearson's Chi-square test using SPSS software version 21.0. **Results:** Among the 1412 selected students, the prevalence of depression was found to be 49.2%, wherein the prevalence of severe depression was 7.7%. The overall prevalence of depression was significantly ($P < 0.001$) higher among girls (55.1%) than boys (45.8%). The prevalence of depression was found to be higher among students belonging to minorities (Buddhism, Jainism, etc.) (63.3%, $P < 0.001$). Elder students were found to be more depressed than younger students. Depression was found to be statistically significantly associated with gender and religion ($P < 0.005$). Guilty feeling (69.48%) was one of the most prominent clinical factors associated with depression followed by pessimism (58.14%), sadness (56.52%), and past failure (55.81%). **Conclusions:** Mental health is one of the most neglected aspects of our society. There is a need to increase awareness about depression among teachers and parents to identify and help depressed adolescents in the school.

Key words: Adolescents, Beck's Depression Inventory-II, Depression, Prevalence

INTRODUCTION

Depression is one of the most common global mental health problems. In adolescents, it is one of the under-recognized health problems due to the inability to

disclose their feelings and reluctant to seek psychiatric help. In the last century, the medical community did not accept the existence of depressive disorders in children. It was believed that children are lacking

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the mature psychological and cognitive structure needed to experience symptoms related to depressive disorders. However, a growing body of evidence proved that children not only experience the whole spectrum of mood disorders but also suffer from significant morbidity and mortality associated with them.^[1] Recent studies have also confirmed the prevalence of depression (10%–60%) in adolescents.^[1–6]

The transition period from childhood to adulthood is a stage marked by emotional instability that makes adolescents vulnerable to depression. Behavioral changes associated with hormonal changes during this period make depression difficult to diagnose. It is reported that more than 70% of the children with depression do not receive appropriate treatment.^[7] The Diagnostic and Statistical Manual of Mental Disorders, Fifth edition has defined symptoms for depression; this includes depressed moods, psychomotor agitation or retardation, diminished interest or pleasure, insomnia, fatigue or loss of energy, diminished ability to concentrate, significant weight loss, feelings of worthlessness or excessive guilt, and recurrent thoughts of death. Individuals exhibiting five or more of those symptoms meet the criteria for major depressive disorders.^[8,9]

There is no ideal screening or assessment tool available for depression assessments. However, combinations of optimal diagnostic tools followed by clinical interviews are commonly used for diagnosis and treatment of depression.^[10] Exploring the magnitude of depression and associated sociodemographic factors among adolescents can contribute to the development of preventive and control strategies for depression. In the present study, we have attempted to estimate the prevalence of depression and its associated sociodemographic factors among school-going students in the rural and urban areas of Patna, Bihar.

MATERIALS AND METHODS

Study design and settings

A cross-sectional, observational study was undertaken from January 2016 to June 2016 in Patna district of Bihar. Bihar is an Indian state located in the northern region of the country with a population of about 100 million and has recorded a growth rate of 25% which exceeds the national average of about 17%.

Study population

Adolescents studying in 9–12th standard from forty schools located in the rural and urban areas of Patna, Bihar, were included in the study. All the students studying in 9–12th standards were eligible to participate in the study.

Sample size

A sample size of 1485 students was estimated considering 10% prevalence^[4–6] of depression in adolescents with the 95% confidence interval, 20% acceptable margin of error, 10% of nonresponse rate, and design effect of 1.5.

Participant recruitment

Representative samples of students were selected using a two-stage cluster sampling method. In the first stage, out of 331 schools, forty schools were randomly selected as primary selection unit (PSU). In stage two, from each PSU, any one class was selected randomly among 9–12th standards as a sampling frame. From each sampling frame, a section of 37 students was selected for study participation. If there were more than 37 students in a section, all the students present in a section were included in the study.

Study tool

The Beck's Depression Inventory II (BDI) was utilized in the study which was translated into Hindi, translated back into English, and then piloted extensively by the All India Institute of Medical Sciences (AIIMS) team in Patna. The self-administered questionnaire comprised 21 items with multiple choice answers, and each answer being scored on a scale of values 0–3 with the maximum possible score of 63. A score of 0–13 was considered as normal, 14–19 as mild/borderline depression, 20–28 as moderate depression, and 29–63 as severe depression.

The questionnaire was distributed to the children as a group in their classrooms during a prearranged time. The children were asked to read the questionnaire and answer it to the best of their ability. Researchers were available to answer any of the children's questions or to clarify instructions; if someone was unable to comprehend the questions, an interview was taken to complete the study.

Statistical analysis

Statistical analyses were performed using the SPSS software version 21.0 (IBM). Descriptive analyses were computed in terms of mean and standard deviation for continuous variables and frequency with a percentage for nominal variables. Pearson's Chi-square test was used to compare categorical variables.

Ethical consideration

Written consent was obtained from the principals of each selected school prior to the study by properly explaining them about the purpose of the study. In each class, an informed consent from the students was obtained after being explained about the purpose of the study and that their responses would be kept confidential. Permission to carry out the study was

granted by the Institutional Ethics Committee, AIIMS, Patna, and District Education Officer, Patna.

RESULTS

A total of 1485 students studying in Class 9 to Class 12 were enrolled in the study, of which approximately 1412 (response rate: 95.05%) students submitted an answer to all the questions. The mean age of selected students was 16.04 ± 1.24 years (range: 14–18 years). Out of all participating students, 893 (63.2%) were male and 519 (36.8%) were female. A majority of participants were from a nuclear family (61.5%) and belonged to Hindu religion (79.4%). Participating students were divided as per their birth order, in their family, as shown in Table 1.

Overall, the prevalence of depression in selected students was found to be 49.2%, wherein the prevalence of severe depression was 7.7%, followed by moderate depression (18.1%), and mild depression (23.4%) [Figure 1].

The prevalence of depression was found to be higher in girls (55.1%; $P < 0.001$) [Table 2]. Students belonging to minority community (Buddhism, Jainism, etc.) (63.3%) had the highest prevalence than students belonging

to Hindu and Muslim communities ($P < 0.001$). The prevalence of depression was lowest among students who was born first in the family, peaked in students who were third, and dipped in students who were fourth and above in the family [Table 2 and Figure 2]. No considerable difference was observed in prevalence among students according to their class/division of study [Figure 3]. Guilty feeling (69.48%) was one of the most prominent clinical factors responsible for depression followed by pessimism (58.14%), sadness (56.52%), and past failure (55.81%) [Table 3]. Inability to cope with academics was one of the leading reasons for the high incidence of depression in the selected population followed by discord in familial relationships and economic difficulties [Table 4].

DISCUSSION

Prevalence of depression in an adolescent may affect their social as well as personal life with potentially serious long-term consequences. Youth with depression is at high risk of mental disorders such as antisocial behavior and substance abuse disorders.^[11] This makes it essential to assess the prevalence of depression in school-going adolescents.

Among the 1412 participants, 695 (49.2%) participants displayed signs of depression. Results of the present study are comparable to previously published study results.^[2] In studies conducted by Nagendra *et al.* and Malik *et al.*, the prevalence of depression was found to be around 50%, which is in line with our study results.^[1,3] Several Indian studies conducted in adolescents have found a prevalence of depression ranging from 10% to 27%, which is much lower than our findings.^[4-6]

The most common severity of depression observed in our study was mild depression (23.4%) followed by moderate depression (18.1%) and severe depression (7.7%).

Table 1: Sociodemographic profile of selected participants

Variable	Number of study participants, n (%)
Sex	
Male	893 (63.2)
Female	519 (36.8)
Class/division	
9	282 (20)
10	345 (24.4)
11	509 (36.0)
12	276 (19.5)
Age of student (years)	
14	195 (13.8)
15	277 (19.6)
16	432 (30.6)
17	297 (21.0)
18	211 (14.9)
Family type	
Nuclear	868 (61.5)
Joint	544 (38.5)
Religion	
Hindu	1121 (79.4)
Muslim	231 (16.4)
Other	60 (4.2)
Birth order	
First	573 (40.6)
Second	395 (28.0)
Third	291 (20.6)
Fourth and above	153 (10.8)

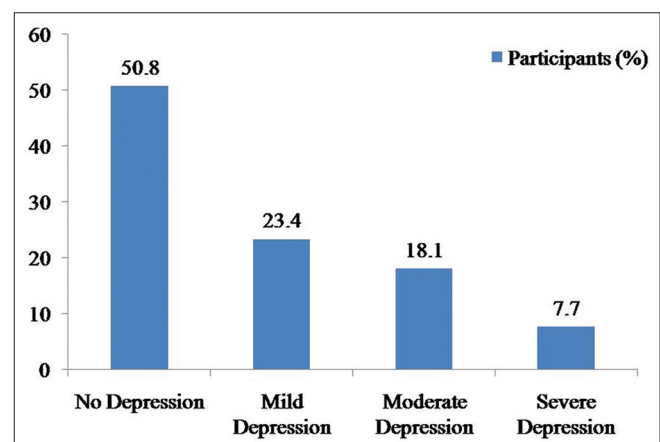


Figure 1: Prevalence of depression as per severity

Naushad *et al.* (39.8%) and Malik *et al.* (26.6%) observed approximately similar prevalence of mild depression. However, in a study conducted by Malik *et al.*, the prevalence of moderate depression (41.2%) was dominating, wherein the prevalence of severe depression (11.4%) was similar to our observations. On the other hand, the prevalence of severe depression in a study conducted by Naushad *et al.* was 1.8% which was much lesser than our observations as well as observations by Malik *et al.*^[3,12]

The study results revealed that the prevalence of depression is significantly associated with gender, religion, and birth order of participants ($P < 0.005$) whereas family structure ($P > 0.005$) did not have any significant impact on the prevalence of depression [Table 2]. Gender has emerged as a leading factor associated with depression. Prevalence

of depression was found to be slightly higher among females than males which are consistent with the results of earlier studies.^[13,14] Angold *et al.* also attributed the preponderance of depression in adolescent females to hormonal changes in puberty.^[15] On the contrary, Naushad *et al.* and Malik *et al.* reported a higher prevalence of depression among males which might be attributed to diverse culture points, the data collection tools, and settings of survey and timings.^[3,12]

The prevalence of depression was also associated with the birth order of students. It was observed that there is an increase in the prevalence of depression with an increase in birth order as reported by Sidana *et al.*^[8] The prevalence of depression was observed to be significantly higher among students belonging minorities. However, these findings cannot be generalized as number of

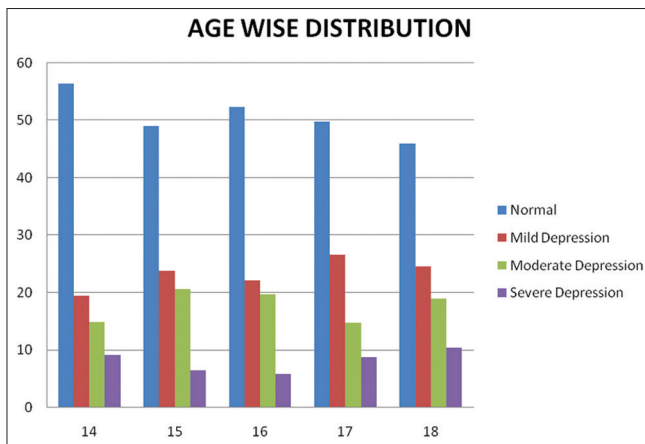


Figure 2: Prevalence of depression according to age

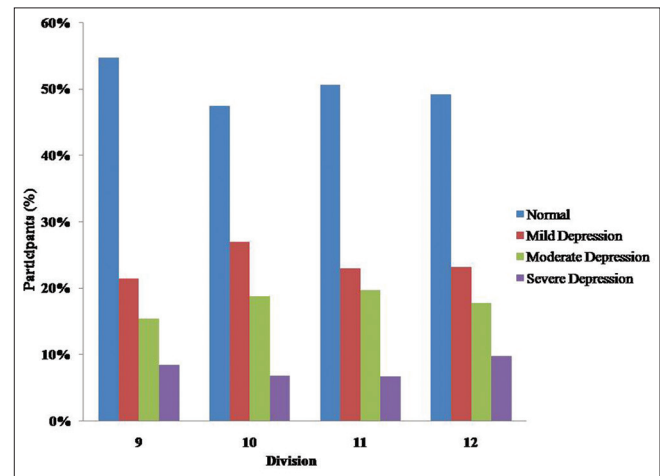


Figure 3: Prevalence of depression according to class/division

Table 2: Prevalence of depression in selected students

	No depression	Mild depression	Moderate depression	Severe depression	χ^2	df	P
Sex							
Male	484 (54.2)	182 (20.4)	161 (18.0)	66 (7.4)	15.65	3	0.001
Female	233 (44.9)	149 (28.7)	94 (18.1)	43 (8.3)			
Total	717 (50.8)	331 (23.4)	255 (18.1)	109 (7.7)			
Family type							
Nuclear	444 (51.2)	202 (23.3)	152 (17.5)	70 (8.1)	0.81	3	0.847
Joint	273 (50.2)	129 (23.7)	103 (18.9)	39 (7.2)			
Total	717 (50.8)	331 (23.4)	255 (18.1)	109 (7.7)			
Religion							
Hindu	578 (51.6)	251 (22.4)	215 (19.2)	77 (6.9)	24.21	6	<0.001
Muslim	117 (50.6)	56 (24.2)	36 (15.6)	22 (9.5)			
Other	22 (36.7)	24 (40.0)	4 (6.7)	10 (16.7)			
Total	717 (50.8)	331 (23.4)	255 (18.1)	109 (7.7)			
Birth order							
First	300 (52.4)	136 (23.7)	98 (17.1)	39 (6.8)	12.81	9	0.171
Second	195 (49.4)	98 (24.8)	63 (15.9)	39 (9.9)			
Third	138 (47.4)	67 (23.0)	68 (23.4)	18 (6.2)			
Fourth and above	84 (54.9)	30 (19.6)	26 (17.8)	13 (8.5)			
Total	717 (50.8)	331 (23.4)	255 (18.1)	109 (7.7)			

Table 3: Number of participants according to clinical features and severity of depression

Clinical features	Number of participants, <i>n</i> (%)			
	No depression	Mild depression	Moderate depression	Severe depression
Sadness	614 (43.48)	684 (48.44)	67 (4.75)	47 (3.33)
Pessimism	591 (41.86)	466 (33)	282 (19.97)	73 (5.17)
Past failure	624 (44.19)	549 (38.88)	197 (13.95)	42 (2.97)
Loss of pleasure	758 (53.68)	439 (31.09)	149 (10.55)	66 (4.67)
Guilty feeling	431 (30.52)	825 (58.43)	133 (9.42)	23 (1.63)
Punishment feeling	804 (56.94)	457 (32.37)	94 (6.66)	57 (4.04)
Self-dislike	827 (58.57)	369 (26.13)	174 (12.32)	42 (2.97)
Self-criticalness	667 (47.24)	475 (33.64)	187 (13.24)	83 (5.88)
Suicidal thoughts wishes	1041 (73.73)	261 (18.48)	64 (4.53)	46 (3.26)
Crying	764 (54.11)	289 (20.47)	161 (11.4)	198 (14.02)
Agitation	743 (52.62)	389 (27.55)	168 (11.9)	112 (7.93)
Loss of interest	801 (56.73)	371 (26.27)	150 (10.62)	90 (6.37)
Indecisiveness	725 (51.35)	408 (28.9)	111 (7.86)	168 (11.9)
Worthlessness	1006 (71.25)	247 (17.49)	96 (6.8)	63 (4.46)
Loss of energy	857 (60.69)	431 (30.52)	93 (6.59)	31 (2.2)
Change in sleeping pattern	768 (54.39)	408 (28.9)	114 (8.07)	122 (8.64)
Irritability	773 (54.75)	437 (30.95)	150 (10.62)	52 (3.68)
Anorexia	810 (57.37)	426 (30.17)	97 (6.87)	79 (5.59)
Concentration difficulty	684 (48.44)	378 (26.77)	201 (14.24)	149 (10.55)
Fatigability	895 (63.39)	351 (24.86)	107 (7.58)	59 (4.18)
Loss of libido	1212 (85.84)	115 (8.14)	43 (3.05)	42 (2.97)

Table 4: Psychological relationship of depression

Stressor	Mild depression (%)	Moderate depression (%)	Severe depression (%)
Parental fighting	18 (5.44)	20 (7.84)	12 (11.01)
Punishment at home	9 (2.72)	11 (4.31)	3 (2.75)
Inability to cope at school	126 (38.07)	116 (45.49)	48 (44.04)
Economic difficulty	32 (9.67)	29 (11.37)	13 (11.93)
Physical punishment at school	3 (0.91)	3 (1.18)	8 (7.34)
Teasing at school	18 (5.44)	12 (4.71)	16 (14.68)
Loss of parent	5 (1.51)	10 (3.92)	8 (7.34)
Substance abuse	7 (2.11)	14 (5.49)	8 (7.34)
Relationship discords	49 (14.80)	52 (20.39)	37 (33.94)
No idea	113 (34.14)	69 (27.06)	30 (27.52)

participants belonging to these religions was very small, and there can be many factors associated with it. Our findings of increase in the prevalence with age is comparable with the results of previously reported studies.^[1,12] However, there are few studies which did not find an increase in the prevalence of depression with age.^[6] Higher prevalence of depression in elder students may be attributed to physical, emotional, and lifestyle changes occurred in their life.

No specific trend was observed in the prevalence of depression according to the division of study. On the contrary, Basin *et al.* have reported a higher prevalence of depression in 10th and 12th division students due to the pressure of academic performance in the board examinations.^[16] We tried to identify factors responsible

for the prevalence of depression. Guilty feeling, pessimism, sadness, and past failure were the prominent factors found to be responsible for depression. Inability to cope with academics at the school was another leading reason observed for the higher BDI scores followed by problematic relationships and economic difficulty. Other factors such as parental fighting, punishment at home or school, teasing at school, loss of parents, and substance abuse had a minor effect. The above findings suggest that students should receive mental counseling at school to cope up with studies and to mitigate other factors responsible for depression. Extra coaching by school teachers for students who are especially weak can help in overcoming hurdle.

It is reported that more than 70% of the children with depression do not receive appropriate diagnosis or treatment for depression.^[7] It is necessary to create awareness about factors associated with depression among students, parents as well as in their teachers with the help of counselors. Our present study throws light on the magnitude of the problem among students and its associated factors which can be further evaluated by qualitative and quantitative methods.

CONCLUSIONS

We recommend active steps to increase awareness about depression among teachers and parents, with the help of school counselors, to identify and help depressed adolescents in the school. Active, early intervention can

help prevent worsening of depression and its impact on life.

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Conflicts of interest

There are no conflicts of interest.

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